What is Claimed:

1. A suspended load backpack, comprising:

a frame;

shoulder straps attached to the frame;

a load storage bag for accepting a load to be carried by said backpack; and

at least one elastic element that connects the load storage bag to the frame, the elastic element having a modulus of elasticity that permits the load storage bag and the load to move up and down relative to the frame in accordance with a gait of a wearer of the backpack.

2. A suspended load backpack as in claim 1, further comprising an outer shell that surrounds at least said load storage bag.

3. A suspended load backpack as in claim 1, wherein said at least one elastic element connects the load storage bag to a top and a bottom portion of said frame.

4. A suspended load backpack as in claim 1, wherein said at least one elastic element is a spring.

5. A suspended load backpack as in claim 1, wherein said at least one elastic element is an elastic strap.

6. A suspended load backpack as in claim 1, further comprising a support plate connected to said load storage bag, said support plate being connected to the frame by said at least one elastic element.

7. A suspended load backpack as in claim 6, wherein said frame has at least two vertical rods, further comprising bushings on each of said vertical rods, said bushings being connected to said support plate on opposite sides of said support plate and adapted to move up and down on said vertical rods with up and down movement of said load storage bag and said support plate.

8. A suspended load backpack as in claim 7, further comprising at least one locking device connected to at least one of said vertical rods and adapted to prevent said support plate from moving with respect to said frame when said locking device is tightened.

9. A suspended load backpack as in claim 1, further comprising a lever actuator adapted to move up and down with the load storage bag relative to the frame.

10. A suspended load backpack as in claim 9, further comprising a lever connected to gears and adapted to turn said gears in response to up and down movement imparted to said lever by said lever actuator as the load storage bag moves up and down.

11. A suspended load backpack as in claim 10, further comprising a fan connected to said gears so as to turn in response to up and down movement imparted to said lever by said lever actuator as the load storage bag moves up and down, said fan being mounted on said frame so as not to move up and down relative to said frame.

12. A suspended load backpack as in claim 10, further comprising a DC servo motor mounted to said frame and responsive to said gears so as to turn gears within the DC servo motor, whereby turning of said gears within the DC servo motor results in the generation of electricity.

13. A suspended load backpack as in claim 12, further comprising a manually controlled potentiometer adapted to adjust a value of load resistance across an output of the DC servo motor.

14. A suspended load backpack as in claim 12, further comprising a tachometer on the DC servo motor, an accelerometer on the frame, an accelerator on the load storage bag, and a microprocessor responsive to outputs of said tachometer and accelerometers to calculate a value for said load resistor on-the-fly as output values of said tachometer and accelerometers change.

15. A suspended load backpack as in claim 1, further comprising a rack adapted to move up and down with the load storage bag relative to the frame and a pinion gear connected to said frame so as not to move up and down relative to the frame.

16. A suspended load backpack as in claim 15, wherein said rack is adapted to cause said pinion gear to turn as said rack moves up and down with said load storage bag.

17. A suspended load backpack as in claim 16, further comprising a fan mounted on said frame so as not to move up and down relative to said frame and connected to said pinion gear so

as to turn in response to up and down movement imparted to said pinion gear by movement of said rack

18. A suspended load backpack as in claim 16, further comprising a DC servo motor mounted to said frame and responsive to said pinion gear so as to turn gears within the DC servo motor, whereby turning of said gears within the DC servo motor results in the generation of electricity.

19. A suspended load backpack as in claim 18, further comprising a manually controlled potentiometer adapted to adjust a value of load resistance across an output of the DC servo motor.

20. A suspended load backpack as in claim 18, further comprising a tachometer on the DC servo motor, an accelerometer on the frame, an accelerator on the load storage bag, and a microprocessor responsive to outputs of said tachometer and accelerometers to calculate a value for said load resistor on-the-fly as output values of said tachometer and accelerometers change.

21. A suspended load backpack as in claim 15, further comprising another rack adapted to move up and down with the load storage bag relative to the frame and another pinion gear connected to said frame so as not to move up and down relative to the frame.

22. A suspended load backpack as in claim 21, further comprising a gear that engages with said pinion gear and said another pinion gear, said pinion gear rotating said gear in a first direction when said rack moves up with said load storage bag and said another pinion gear rotating said gear in said first direction when said another rack moves down with said load storage bag.

23. A suspended load backpack as in claim 22, further comprising a DC servo motor mounted to said frame and responsive to said gear so as to turn gears within the DC servo motor, whereby turning of said gears within the DC servo motor results in the generation of electricity.

24. A suspended load backpack as in claim 1, further comprising a rod adapted to move up and down with the load storage bag and a piston mounted on the frame and responsive to up and down movement of said rod, said piston including a diaphragm that moves up and down with

said rod within a cylinder so as to drive turbine-driven generators on the top and bottom of said cylinder.

25. A suspended load backpack as in claim 24, wherein said turbine-driven generators each comprise fans with blade directions that are opposite to each other.

26. A suspended load backpack as in claim 1, wherein said at least one elastic element comprises electroactive polymer (EAP) straps.

27. A suspended load backpack as in claim 26, further comprising electrodes on each of said EAP straps and power control circuitry responsive to outputs of said electrodes.

28. A suspended load backpack for use in the generation of electricity, comprising:

a frame;

shoulder straps attached to the frame;

a load storage bag for accepting a load to be carried by said backpack;

at least one elastic element that connects the load storage bag to the frame, the elastic element having a modulus of elasticity that permits the load storage bag and the load to move up and down relative to the frame in accordance with a gait of a wearer of the backpack; and

an energy conversion device that converts up and down movement of the load storage bag and the load into electrical energy.

29. A suspended load backpack as in claim 28, further comprising an outer shell that surrounds at least said load storage bag.

30. A suspended load backpack as in claim 28, wherein said at least one elastic element connects the load storage bag to a top and a bottom portion of said frame.

31. A suspended load backpack as in claim 28, wherein said at least one elastic element is a spring.

32. A suspended load backpack as in claim 28, wherein said at least one elastic element is an elastic strap.

33. A suspended load backpack as in claim 28, further comprising a support plate connected to said load storage bag, said support plate being connected to the frame by said at least one elastic element.

34. A suspended load backpack as in claim 33, wherein said frame has at least two vertical rods, further comprising bushings on each of said vertical rods, said bushings being connected to said support plate on opposite sides of said support plate and adapted to move up and down on said vertical rods with up and down movement of said load storage bag and said support plate.

35. A suspended load backpack as in claim 34, further comprising at least one locking device connected to at least one of said vertical rods and adapted to prevent said support plate from moving with respect to said frame when said locking device is tightened.

36. A suspended load backpack as in claim 28, further comprising a lever actuator adapted to move up and down with the load storage bag relative to the frame.

37. A suspended load backpack as in claim 36, further comprising a lever connected to gears and adapted to turn said gears in response to up and down movement imparted to said lever by said lever actuator as the load storage bag moves up and down.

38. A suspended load backpack as in claim 37, wherein said lever actuator is adjustable to be moved away from said lever to permit said gears to be accessed for manual cranking.

39. A suspended load backpack as in claim 37, wherein said conversion device comprises a DC servo motor mounted to said frame and responsive to said gears so as to turn gears within the DC servo motor, whereby turning of said gears within the DC servo motor results in the generation of electrical energy.

40. A suspended load backpack as in claim 39, further comprising a manually controlled potentiometer adapted to adjust a value of load resistance across an output of the DC servo motor.

41. A suspended load backpack as in claim 39, further comprising a tachometer on the DC servo motor, an accelerometer on the frame, an accelerator on the load storage bag, and a

microprocessor responsive to outputs of said tachometer and accelerometers to calculate a value for said load resistor on-the-fly as output values of said tachometer and accelerometers change.

42. A suspended load backpack as in claim 28, further comprising a rack adapted to move up and down with the load storage bag relative to the frame and a pinion gear connected to said frame so as not to move up and down relative to the frame.

43. A suspended load backpack as in claim 42, wherein said rack is adapted to cause said pinion gear to turn as said rack moves up and down with said load storage bag.

44. A suspended load backpack as in claim 43, wherein said rack is adjustable to be moved away from said pinion gear to permit said pinion gear to be accessed for manual cranking.

45. A suspended load backpack as in claim 43, wherein said conversion device comprises a DC servo motor mounted to said frame and responsive to said pinion gear so as to turn gears within the DC servo motor, whereby turning of said gears within the DC servo motor results in the generation of electrical energy.

46. A suspended load backpack as in claim 45, further comprising a manually controlled potentiometer adapted to adjust a value of load resistance across an output of the DC servo motor.

47. A suspended load backpack as in claim 45, further comprising a tachometer on the DC servo motor, an accelerometer on the frame, an accelerator on the load storage bag, and a microprocessor responsive to outputs of said tachometer and accelerometers to calculate a value for said load resistor on-the-fly as output values of said tachometer and accelerometers change.

48. A suspended load backpack as in claim 42, further comprising another rack adapted to move up and down with the load storage bag relative to the frame and another pinion gear connected to said frame so as not to move up and down relative to the frame.

49. A suspended load backpack as in claim 48, further comprising a gear that engages with said pinion gear and said another pinion gear, said pinion gear rotating said gear in a first direction when said rack moves up with said load storage bag and said another pinion gear

rotating said gear in said first direction when said another rack moves down with said load storage bag.

50. A suspended load backpack as in claim 49, further comprising a DC servo motor mounted to said frame and responsive to said gear so as to turn gears within the DC servo motor, whereby turning of said gears within the DC servo motor results in the generation of electrical energy.

51. A suspended load backpack as in claim 28, further comprising a rod adapted to move up and down with the load storage bag and a piston mounted on the frame and responsive to up and down movement of said rod, said piston including a diaphragm that moves up and down with said rod within a cylinder so as to drive turbine-driven generators on the top and bottom of said cylinder.

52. A suspended load backpack as in claim 51, wherein said turbine-driven generators each comprise fans with blade directions that are opposite to each other.

53. A suspended load backpack for use in the generation of electricity, comprising:

a frame;

shoulder straps attached to the frame;

a load storage bag for accepting a load to be carried by said backpack;

at least one electroactive polymer (EAP) strap that connects the load storage bag to the frame, each EAP having a modulus of elasticity that permits the load storage bag and the load to move up and down relative to the frame in accordance with a gait of a wearer of the backpack,

wherein each EAP converts up and down movement of the load storage bag and the load into electrical energy.

54. A suspended load backpack as in claim 53, further comprising electrodes on each of said EAP straps and power control circuitry responsive to outputs of said electrodes.